

Abstract

A mud pulser controlled by a field applied to an electroactive fluid. The electroactive fluid is employed to act as a rapid-response brake to slow or interrupt the rotation of a mud motor or mud siren, thus creating pressure pulses in a circulating fluid. In certain embodiments, the electroactive fluid is used as a direct brake acting on a shaft rotating in a volume of electroactive fluid where the shaft is coupled to the mud motor or siren. The application of a field to the electroactive fluid impedes the rotation of the shaft, thus slowing the mud motor and creating a pressure pulse in the circulating fluid. In another embodiment, a Moineau pump circulating an electroactive fluid is coupled to the mud motor. The application of a field to the electroactive fluid slows the rotation of the pump, thus slowing the mud motor and creating a pressure pulse in the circulating fluid.